

<110> R. Rogers Yocum  
Mark K. Williams  
Janice G. Pero

<120> METHODS AND ORGANISMS FOR PRODUCTION OF B6 VITAMERS

<130> OGZ-002US

<150> 60/367089

<151> 2002-03-22

<150> 60/367863

<151> 2002-03-25

<150> 60/368618

<151> 2002-03-29

<150> 60/451824

<151> 2003-03-03

<150> PCT/US03/008880

<151> 2003-03-21

<160> 27

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 46

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 1

ccctctagag gaggagaaaa catggctcaa acaggtactg aacgtg

46

<210> 2

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 2

cccggatcct caactgtttt atacaagtgc cttttgctta tatttc

45

<210> 3

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 3

ccctctagag gaggagacat aatggaacgt acaacgaatt ttaacgcag

49

<210> 4

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 4

cccggatccc ggacggtttg catagccaga ctttttactc a

41

<210> 5

<211> 5322

<212> DNA

<213> Artificial Sequence

<220>

<223> plasmid - pDX1F

<400> 5

tgccgcccgt cagggcgcggt ccattcgcca ttcaggctgc gcaactgttg ggaagggcgga 60  
 tcggtgcggg cctcttcgct attacgccag ctggcgaaag ggggatgtgc tgcaaggcgga 120  
 ttaagttggg taacgccagg gttttcccag tcacgacgtt gtaaaacgac ggccagtga 180  
 ttgtaatacg actcactata gggcggaattg ggcccagcgt cgcattgctcc cggccgccat 240  
 ggccgcgggg tccctctaga ggaggagaaa acatgggtca aacagggtact gaacgtgtaa 300  
 aacgcggaat ggcagaaatg caaaaaggcg gcgtcatcat ggacgtcatc aatgcggaac 360  
 aagcgaataat cgctgaagaa gctggagctg tcgctgtaat ggcgctagaa cgtgtgccag 420  
 cagatattcg cgcggctgga ggagttgccc gtatggctga ccctacaatc gtggaagaag 480  
 taatgaatgc agtatctatc ccggtaatgg caaaagcgcg tatcggacat attgttgaag 540  
 cgctgtgtct tgaagctatg ggtgttgact atattgatga aagtgaagtt ctgacgccgg 600  
 ctgacgaaga atttcattta aataaaaatg aatacacagt tccttttgtc tgtggctgcc 660  
 gtgatcttgg tgaagcaaca cgccgtattg cggaagggtc ttctatgctt cgcacaaaag 720  
 gtgagcctgg aacaggtaat attgttgagg ctgttcgcca tatgcgtaaa gttatcacta 780  
 gtgcggccgc ctgcaggctg accatatggg agaggcgggc gcgtcgacca atagttacc 840  
 ttattatcaa gataagaaag aaaaggattt ttcgctacgc tcaaatacct taaaaaaca 900  
 caaaagacca cattttttaa tgtggtcttt attcttcaac taaagcacc attagttcaa 960  
 caaacgaaaa ttggataaag tgggatattt ttaaaatata tatttatgtt acagtaatat 1020  
 tgacttttaa aaaaggattg attctaataga agaaagcaga caagtaagcc tcctaaattc 1080  
 acttttagata aaaatttagg aggcataatc aatgaacttt aataaaattg atttagacaa 1140

ttggaagaga aaagagatat ttaatcatta tttgaaccaa caaacgactt ttagtataac 1200  
 cacagaaatt gatatttagt ttttataacc aaacataaaa caagaaggat ataaatttta 1260  
 ccctgcattt attttcttag tgacaagggt gataaactca aatacagctt ttagaactgg 1320  
 ttacaatagc gacggagagt taggttattg ggataagtta gagccacttt atacaatttt 1380  
 tgatggtgta tctaaaacat tctctggtat ttggactcct gtaaagaatg acttcaaaga 1440  
 gttttatgat ttataccttt ctgatgtaga gaaatataat gggtcgggga aattgtttcc 1500  
 caaaacacct atacctgaaa atgctttttt tctttctatt attccatgga cttcatttac 1560  
 tgggtttaac ttaaatatca ataataatag taattacctt ctaccatta ttacagcagg 1620  
 aaaattcatt aataaaggta attcaatata tttaccgcta tctttacagg tacatcattc 1680  
 tgtttgatg ggttatcatg caggattggt tatgaactct attcaggaat tgtcagatag 1740  
 gcctaatac tggtttttat aatatgagat aatgccgact gtacttttta cagtcggttt 1800  
 tctaattgca ctaacctgcc cgttaggtt aagaagggtt ttatattaca gctccgggtac 1860  
 cgggctccca acgcgttgga tgcataagct gagtattcta tagtgtcacc taaatagctt 1920  
 ggcgtaatca tggctatagc tgtttcctgt gtgaaattgt tatccgaaca atagggtgac 1980  
 taggacttca aggagcagtt agagagcaca tccatgcgat tgaagcatgc ggcgcggctg 2040  
 gtcttgctgt aaaacgtccg gagcagctga acgaagttga cgggttgatt ttgccgggcg 2100  
 gtgagagcac gacgatgcgc cgtttgatcg atacgtatca attcatggag ccgcttcgtg 2160  
 aattcgctgc tcagggcaaa ccgatgtttg gaacatgtgc cggattaatt atattagcaa 2220  
 aagaaattgc cggttcagat aatcctcatt taggtcttct gaatgtggtt gtagaacgta 2280

attcatttgg	ccggcaggtt	gacagctttg	aagctgattt	aacaattaaa	ggcttggacg	2340
agccttttac	tggggtatcc	atccgtgctc	cgcataat	agaagctggg	gaaaatgttg	2400
aagttctatc	ggagcataat	ggtcgtattg	tagccgcgaa	acaggggcaa	ttccttggct	2460
gctcattcca	tccggagctg	acagaagatc	accgagtgc	gcagctgttt	gttgaaatgg	2520
ttgaggaata	taagcaaaaag	gcacttgtat	aaaacagttg	aggatccggg	atcactagt	2580
cggccgcctg	caggtcgacc	atatgggaga	gctcccaacg	cggttgatgc	atagcttgag	2640
tattctatag	tgtcacctaa	atagcttggc	gtaatcatgg	tcatagctgt	ttcctgtgtg	2700
aaattgttat	ccgctcacaa	ttccacacaa	catacgagcc	ggaagcataa	agtgtaaaagc	2760
ctggggtgcc	taatgagtga	gctaactcac	attaattgcg	ttgcgctcac	tgcccgcctt	2820
ccagtcggga	aacctgtcgt	gccagctgca	ttaatgaatc	ggccaacgcg	cggggagagg	2880
cggtttgctg	attgggcgtc	cttcgcgttc	ctcgctcact	gactcgctgc	gctcggtcgt	2940
tcggctgcgg	cgagcgggat	cagctcactc	aaaggcggta	atacggttat	ccacagaatc	3000
aggggataac	gcaggaaaag	acatgtgagc	aaaaggccag	caaaaggcca	ggaaccgtaa	3060

aaaggccgcg	ttgctggcgt	ttttcgatag	gctccgcccc	cctgacgagc	atcacaaaaa	3120
tcgacgctca	agtcagaggt	ggcgaaaacc	gacaggacta	taaagatacc	aggcggttcc	3180
ccctggaagc	tccctcgtgc	gctctcctgt	tccgaccctg	ccgcttaccg	gatacctgtc	3240
cgcctttctc	ccttcgggaa	gcgtggcgct	ttctcatagc	tcacgctgta	ggtatctcag	3300
ttcggtgtag	gtcgttcgct	ccaagctggg	ctgtgtgcac	gaaccccccg	ttcagcccga	3360
ccgctgcgcg	ttatccggtc	actatcgctc	tgagtccaac	ccggtaagac	acgacttatc	3420
gccactggca	gcagccactg	gtaacaggat	tagcagagcg	aggatgtag	gcggtgctac	3480
agagtctctg	aagtgggtggc	ctaactacgg	ctacactaga	aggacagtat	ttggtatctg	3540
cgctctgctg	aagccagtta	ccttcggaaa	aagagttggg	agctcttgat	ccggcaaaaa	3600
aaccaccgct	ggtagcgggt	gtttttttgt	ttgcaagcag	cagattacgc	gcagaaaaaa	3660
aggatctcaa	gaagatcctt	tgatcttttc	tacggggctc	gacgctcagt	ggaacgaaaa	3720
ctcacgttaa	gggatttttg	tcatagagatt	atcaaaaagg	atcttcacct	agatcctttt	3780
aaattaaaaa	tgaagtttta	aatcaatcta	aagtatatat	gagtaaaact	ggtctgacag	3840
ttaccaatgc	ttaatcagtg	aggcacctat	ctcagcgatc	tgtctatttc	gttcattcat	3900
agttgcctga	ctccccgtcg	tgtagataac	tacgatacgg	gagggcttac	catctggccc	3960
cagtgcctga	atgataccgc	gagacccacg	ctcaccggct	ccagatttat	cagcaataaa	4020
ccagccagcc	ggaagggccg	agcgcagaag	tggtcctgca	actttatccg	cctccatcca	4080
gtctattaat	tgttgccggg	aagctagagt	aagtagttcg	ccagttaata	gtttgcgcaa	4140
cgttgttgcc	attgctacag	gcacgtgggt	gtcacgctcg	tcgtttggta	tggcttcatt	4200
cagctccggt	tcccaacgat	caaggcgagt	tacatgatcc	cccattgtgt	gcaaaaaaagc	4260
ggttagctcc	ttcggctcct	cgatcgttgt	cagaagtaag	ttggccgcag	tggtatcact	4320
catgggttat	gcagcactgc	ataattctct	tactgtcatg	ccatccgtaa	gatgcttttc	4380
tgtgactggg	gagtactcaa	ccaagtcatt	ctgagaatac	cgcgcccggc	gaccgagttg	4440
ctcttgcccg	gcgtcaatac	gggataatag	tgtatgacat	agcagaactt	taaaagtgtc	4500
catcattgga	aaacgttctt	cgggcgaaaa	actctcaagg	atcttaccgc	tggtgagatc	4560
cagttcgatg	taaccactc	gtgcacccaa	ctgatcttca	gcattcttta	ctttcaccag	4620
cgtttctggg	tgagcaaaaa	caggaaggca	aatgcccga	aaaaagggaa	taagggcgac	4680
acggaaatgt	tgaataactc	tactcttcct	ttttcaatat	tattgaagca	tttatcaggg	4740
ttattgtctc	atgagcggat	acataattga	atgtatttag	aaaaataaac	aaataggggt	4800
tccgcgcaca	tttccccgaa	aagtgccacc	tgtatgcggg	gtgaaatacc	gcacagatgc	4860
gtaaggagaa	aataccgcct	caggcgaaat	tgtaaacggt	aatattttgt	taaaattcgc	4920
gttaaataat	tgtaaataca	gctcattttt	taaccaatag	gccgaaatcg	gcaaaatccc	4980

ttataaatca	aaagaataga	ccgagatagg	gttgagtgtt	gttccagttt	ggaacaagag	5040
tccactatta	aagaacgtgg	actccaacgt	caaagggcga	aaaaccgtct	atcagggcga	5100
tggcccacta	cgtgaaccat	cacccaatc	aagttttttg	cggtcgaggt	gccgtaaagc	5160
tctaaatcgg	aaccctaaag	ggagcccccg	atttagagct	tgacggggaa	agccggcgaa	5220
cgtggcgaga	aaggaaggga	agaaagcgaa	aggagcgggc	gctagggcgc	tggcaagtgt	5280
agcggtcacg	ctgcgcgtaa	ccaccacacc	cgcgcgctt	aa		5322

&lt;210&gt; 6

&lt;211&gt; 5297

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; plasmid - pDX11F

&lt;400&gt; 6

```

tgcgccgcta cagggcgcggt ccattcgcca ttcagggtgc gcaactgttg ggaagggcgga 60
tcggtgcggg cctcttcgct attacgccag ctggcgaaag ggggatgtgc tgcaagggcgga 120
ttaagttggg taacgccagg gttttcccag tcacgacggt gtaaaacgac ggccagtgaa 180
ttgtaatacg actcactata gggcggaattg ggcccgacgt cgcattgctcc cggccgccat 240
ggccgcggga tccctctaga ggaggagaca taatggaacg tacaacgaat tttaacgcag 300
gtcctgcagc gctgccactg gaagttctgc aaaaagcaca gaaagaattt attgatttta 360
acgaatccgg catgtctggt atggagcttt ccaccgcag caaagagtat gaagcgggtgc 420
accaaaaaagc gaaaagcctc ttaatcgaaac tgatgggcat tccggaagat tacgatatct 480
tggtttcttca aggcggggca agccttcaat tctcaatgct tccgatgaac tttttaacac 540
ctgaaaaaac cgcacatttt gtgatgaccg gcgcttggtc tgaaaaagca ctggcagaaa 600
cgaaactggt cgggaacacg tctatcaccg ctacaagtga aacagacaat tacagttata 660
ttccagaggt tgaccttacg gatgtaaaag acggcgcata tttacatata acatccaaca 720
atacaatttt cggcactcag tggcaggagt ttccgaattc tccaattccg ctctagaccg 780
acatgtccag cgatatttta agcagaaaaa tcgatgtgtc caaatttgat gtgatctacg 840
gaggcatcac tagtgccggc gcctgcaggt cgaccatatg ggagaggcgg ccgcgtcgac 900
caatagttac ccttattatc aagataagaa agaaaaggat ttttcgctac gctcaaatcc 960
tttaaaaaaa cacaaaagac cacatttttt aatgtggtct ttattcttca actaaagcac 1020
ccattagttc aacaaacgaa aattggataa agtgggatat ttttaaaata tatatttatg 1080
ttacagtaat attgactttt aaaaaaggat tgattctaata gaagaaagca gacaagtaag 1140
cctcctaaat tcacttttaga taaaaattta ggaggcatat caaatgaact ttaataaaat 1200
tgatttagac aattggaaga gaaaagagat atttaatcat tatttgaacc aacaaacgac 1260
ttttagttata accacagaaa ttgatattag tgtttttatac cgaaacataa aacaagaagg 1320
atataaattt taccctgcat ttattttctt agtgacaagg gtgataaact caaatcacgc 1380
ttttagaact ggtttacaata gcgacggaga gttaggttat tgggataagt tagagccact 1440
ttatacaatt ttgtatggtg tatctaaaac attctctggt atttgactc ctgtaaaaga 1500
tgacttcaaa gagtttttatg atttatacct ttctgatgta gagaaatata atggttcggg 1560
gaaattgttt cccaaaacac ctataacctg aaatgctttt tctctttcta ttattccatg 1620
gacttcattt actgggttta acttaaatat caataataat agtaattacc ttctacccat 1680
tattacagca ggaaaattca ttaataaagg taattcaata tatttaccgc tatctttaca 1740
ggtacatcat tctgtttgtg atggttatca tgcaggattg tttatgaact ctattcagga 1800
attgtcagat aggcctaata actggctttt ataatatgag ataatgccga ctgtactttt 1860
tacagtcggg tttctaatagt cactaacctg ccccgttagt tgaagaagg ttttatatta 1920
cagctccggg accgggctcc caacgcgttg gatgcatagc ttgagtattc tatagtgtca 1980
cctaaatagc ttggcgtaat catggtcata gctgtttcct gctgtgaaatt gttatccgct 2040
gtcatcatga aaaaaagctg gctgcaaaat gaaaatgcga acgtcccaaa aatcctgaaa 2100
tattccacgc atgtcaaagc ggattcactc tacaacactc cgccgacatt tgcgatttat 2160
atgctgagcc tcgttctgga atggctcaag gaaaacggcg gtgtggaagc tgttgaacag 2220
cgcaatgaac aaaaagcgca gggtctctac agctgtattg atgaaagcaa cggcttctat 2280
aaaggacatg ccagaaaaga cagccgctca cgcattgaatg tcacattcac gcttcgggat 2340
gacgaattaa cgaaaacatt cgttcagaaa gcaaaagatg cgaagatgat cggccttggc 2400
ggacaccgtt cgggtgggagg ctgccgcgct tctattttata acgcggtctc tctcgaagac 2460
tgtgaaaaat tagctgcgtt catgaagaaa ttccagcagg aaaatgagta aaaagtctgg 2520
ctatgcattc tagtcgggat ccgggatcac tagtgcggcc gcctgcagggt cgaccatatg 2580
ggagagctcc caacgcgttg gatgcatagc ttgagtattc tatagtgtca cctaaatagc 2640
ttggcgtaat catggtcata gctgtttcct gtgtgaaatt gttatccgct cacaattcca 2700
cacaacatac gagccggaag cataaagtgt aaagcctggg gtgcctaata agtgagctaa 2760
ctcacattaa ttgcgttgcg ctactgccc gctttccagt cgggaaacct gtcgtgccag 2820
ctgcattaat gaatcggcca acgcgcgggg agaggcgggt tgcgtattgg gcgctcttcc 2880
gcttctctgc tcaactgactc gctgcgctcg gtcgttcggc tgcggcgagc ggtatcagct 2940
cactcaaagg cggtaatacg gttatccaca gaatcagggg ataacgcagg aaagaacatg 3000
tgagcaaaa gcccacaaa ggccaggaac cgtaaaaagg ccgcgttgct ggcgttttct 3060
gataggctcc gcccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga 3120
aaccgcagag gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct 3180
cctgttccga cctgcgcgtt taccggatac ctgtccgctt ttctcccttc gggaagcgtg 3240
gcgctttctc atagctcacg ctgtaggtat ctcagttcgg tgtaggtcgt tcgctccaag 3300
ctgggctgtg tgcacgaacc ccccgttcag cccgaccgct gcgccttatc cggtaaactat 3360
cgtcttgagt ccaaccgcgt aagacacgac ttatcgccac tggcagcagc cactggtaac 3420

```

aggattagca	gagcgaggt	tgtaggcgg	gctacagagt	tcttgaagt	gtggcctaac	3480
tacggctaca	ctagaaggac	agtatttgg	atctgcgctc	tgctgaagcc	agttaccttc	3540
ggaaaaagag	ttggtagctc	ttgatccggc	aaacaaacca	ccgctggtag	cgggtggtttt	3600
tttgtttgca	agcagcagat	tacgcgcaga	aaaaaaggat	ctcaagaaga	tcctttgatc	3660
ttttctacgg	ggtctgacgc	tcagtggaa	gaaaactcac	gttaagggat	tttgggtcatg	3720
agattatcaa	aaaggatctt	cacctagatc	cttttaaatt	aaaaatgaag	ttttaaatca	3780
atctaaagta	tatatgagta	aacttgggtc	gacagttacc	aatgcttaat	cagtgaaggca	3840
cctatctcag	cgatctgtct	atttcgttca	tccatagttg	cctgactccc	cgctcgtgtag	3900
ataactacga	tacgggaggg	cttaccatct	ggccccagtg	ctgcaatgat	accgcgagac	3960
ccacgctcac	cggctccaga	tttatcagca	ataaaccagc	cagccggaag	ggccgagcgc	4020
agaagtggtc	ctgcaacttt	atccgcctcc	atccagctca	tttaattgttg	ccgggaagct	4080
agagtaagta	gttcgccagt	taatagtttg	cgcaacgttg	ttggcattgc	tacaggcatc	4140
gtggtgtcac	gctcgtcggt	tggtatggct	tcattcagct	ccggttccca	acgatcaagg	4200
cgagttacat	gatcccccat	gttgtgcaaa	aaagcggtta	gctccttcgg	tcctccgatc	4260
gttgtcagaa	gtaagttggc	cgcagtgtta	tcactcatgg	ttatggcagc	actgcataat	4320
tctcttactg	tcatgccatc	cgtaagatgc	ttttctgtga	ctgggtgagta	ctcaaccaag	4380
tcattctgag	aataccgcgc	ccggcgaccg	agttgctctt	gcccggcgctc	aatacgggat	4440
aatagtgtat	gacatagcag	aactttaaaa	gtgctcatca	ttggaaaacg	ttcttcgggg	4500
cgaaaactct	caaggatctt	accgctgttg	agatccagtt	cgatgtaacc	cactcgtgca	4560
cccaactgat	cttcagcatc	ttttactttc	accagcgttt	ctgggtgagc	aaaaacagga	4620
aggcaaaatg	ccgcaaaaaa	gggaataaag	gcgacacgga	aatggtgaat	actcatactc	4680
ttcctttttc	aatattattg	aagcattttat	cagggttatt	gtctcatgag	cggatacata	4740
tttgaatgta	tttagaaaaa	taaacaaata	ggggttcgcg	gcacatttcc	ccgaaaagtg	4800
ccacctgtat	gcggtgtgaa	ataccgcaca	gatgcgtaag	gagaaaatac	cgcacaggc	4860
gaaattgtaa	acgttaatat	tttgttaaaa	ttcgcgttaa	atatttggtta	aatcagctca	4920
ttttttaacc	aataggccga	aatcggcaaa	atcccttata	aatcaaaaga	atagaccgag	4980
atagggttga	gtgttgttcc	agtttggaa	aagagtcac	tattaaagaa	cgtggactcc	5040
aacgtcaaag	ggcgaaaaac	cgtctatcag	ggcgtatggc	cactacgtga	accatcacc	5100
aaatcaagtt	ttttcggtc	gaggtgccgt	aaagctctaa	atcggaacc	ttaaaggagc	5160
ccccgattta	gagcttgacg	gggaaaagccg	gcgaacgtgg	cgagaaagga	aggggaagaa	5220
gcgaaaggag	cgggcgctag	ggcgctggca	agtgtagcgg	tcacgctgcg	cgtaaccacc	5280
acaccgcgcg	cgcttaa					5297

&lt;210&gt; 7

&lt;211&gt; 6731

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; plasmid - pDX14R

&lt;400&gt; 7

ttgcggccgc	ttcgaaagct	gtaatatataa	aaccttcttc	aactaacggg	gcagggttagt	60
gacattagaa	aaccgactgt	aaaaagtaca	gtcggcatta	tctcatatta	taaaagccag	120
tcattaggcc	tatctgacaa	ttcctgaata	gagttcataa	acaatcctgc	atgataacca	180
tcacaaacag	aatgatgtac	ctgtaaagat	agcggtaaat	atattgaatt	acctttatta	240
atgaattttc	ctgctgtaat	aatgggtaga	aggtaattac	tattattatt	gatatttaag	300
ttaaaccag	taaatgaagt	ccatggaata	atagaaagag	aaaaagcatt	ttcaggtata	360
ggtgttttgg	gaaacaattt	ccccgaacca	ttatatttct	ctacatcaga	aagggtataaa	420
tcataaaact	ctttgaagtc	attctttaca	ggagtccaaa	taccagagaa	tgtttttagat	480
acaccatcaa	aaattgtata	aagtggctct	aacttatccc	aataacctaa	ctctccgtcg	540
ctattgtaac	cagttctaaa	agctgtattt	gagtttatca	cccttgctac	taagaaaata	600
aatgcagggt	aaattttata	tccttcttgg	tttatgtttc	ggtataaaac	actaatatca	660
atttctgtgg	ttataactaaa	agtcgtttgt	tggttcaaat	aatgattaaa	tatctctttt	720
ctcttccaat	tgtctaaatc	aattttatta	aagttcattt	gatatgcctc	ctaaattttt	780
atctaaagt	aatttaggag	gcttacttgt	ctgctttctt	cattagaatc	aatccttttt	840
taaaagtcaa	tattactgta	acataaatat	atattttaaa	aatatcccac	tttatccaat	900
tttcgtttgt	tgaactaatg	ggtgcttttag	ttgaagaata	aagaccacat	taaaaaatgt	960
ggtcttttgt	gttttttttaa	aggattttgag	cgtagcgaaa	aatccttttc	tttcttatct	1020

tgataataag	ggtactatt	gaattcggt	ccaagagttt	gtagaaacgc	aaaaaggcca	1080
tccgtcagga	tggccttctg	cttaatttga	tgcctggcag	tttatggcgg	gcgtcctgcc	1140
cgccaccctc	cgggccgttg	cttcgcaacg	ttcaaattccg	ctcccggcgg	atttgcctta	1200
ctcaggagag	cgttcaccga	caaacaacag	ataaaacgaa	aggcccagtc	tttcgactga	1260
gcctttcgtt	ttatttgatg	cctggcagtt	ccctactctc	gcatggggag	acccacact	1320
accatcggcg	ctacggcggt	tcacttctga	gttcggcatg	gggtcagggtg	ggaccaccgc	1380
gctactgccg	ccaggcaaat	tctgttttat	cagaccgctt	ctgcgttctg	atttaactctg	1440
tatcaggctg	aaaatcttct	ctcatccgcc	aaaacaggat	cctcaactgt	tttatacaag	1500
tgccttttgc	ttatattcct	caaccatttc	aacaaacagc	tgcgtcactc	ggtgatcttc	1560
tgtcagctcc	ggatggaatg	agcagccaag	gaattgcctc	tgtttcgcgg	ctacaatacg	1620
accattatgc	tccgatagaa	cttcaacatt	ttcaccagct	tctaaaatat	gcggagcacg	1680
gatgaatacc	ccagtaaaag	ggtcgtccaa	gcctttaatt	gttaaatacag	cttcaagct	1740
gtcaacctgc	cggccaaatg	aattacgttc	tacaaccaca	ttcagaagac	ctaaatgagg	1800
attatctgaa	ccggcaattt	cttttgctaa	tataattaat	ccggcacatg	ttccaaacat	1860
cggtttgccc	tgagcagcga	attcacgaag	cggctccatg	aattgatacg	tatcgatcaa	1920
acggcgcatc	gtcgtgctct	caccgcccgg	caaaatcaac	ccgtcaactt	cgttcagctg	1980
ctccggacgt	tttacgacaa	gaccagccgc	gccgcatgct	tcaatcgcat	ggatgtgctc	2040
tctaactgct	ccttgaagtc	ctagtacacc	tattgttaac	atgtcagcag	cgctcctatg	2100
ttcttaccag	ccgcgttctt	gcatacgctg	ttctggaagt	aagtttgaga	tttcaatccc	2160
tttcattgca	gtaccaagct	cttttgacaa	ctcagcgatt	aatttgtaat	cagtaaaagt	2220
agttgttgct	tccacaattg	ctttcgcaaa	tttagcaggg	ttgtctgatt	taaaaatacc	2280
agaaccaaca	aatactccgt	cagcaccaag	ctgcatcatg	agagcagcat	cagctggagt	2340
tgctacgccg	ccagcggcaa	agttaacgac	aggaagcttg	ccgtcttttt	taatttgaag	2400
aagaagctcg	taaggagcac	ctagggtttt	cgcttctgtc	attagctcat	cctcactcat	2460
cgcaactact	ttgcgcactt	gagcgttaac	tttacgcata	tggcgaacag	cctcaacaat	2520
attacctggt	ccaggctcac	cttttgtgcg	aagcatagaa	gcaccttccg	caatacggcg	2580
tgttgcttca	ccaagatcac	ggcagccaca	gacaaaagga	actgtgtatt	catttttatt	2640
taaatgaaat	tcttcgctcag	ccggcgctcag	aacttcactt	tcatcaatat	agtcaacacc	2700
catagcttca	agcacacgcg	cttcaacaat	atgtccgata	cgcgcttttg	ccattaccgg	2760
gatagatact	gcattcatta	cttcttccac	gattgtaggg	tcagccatac	gggcaactcc	2820
tccagccgcg	cgaatatctg	ctggcacacg	ttctagcgcc	attacagcga	cagctccagc	2880
ttcttcagcg	attttcgcct	gttccgcatt	gatgacgtcc	atgatgacgc	cgcttttttg	2940
cattttctgcc	attccgcggt	ttacacgttc	agtacctgtt	tgagccatgt	tttctcctcc	3000
tctagagcgt	cctgctgttg	ttaagattat	tataccacac	cttgtagata	aagtcaacaa	3060
ctttttgcaa	aatttttccag	gaatttttagc	agaggttggt	ctggatgtag	aacaaaacat	3120
ctttccgcctc	ttgtgctggt	aggatatctt	tcttggaagc	taggtaggcc	tcgagttatg	3180
gcagttgggt	aaaaggaaac	aaaaagaccg	ttttcacaca	aaacggtctt	tttcgatttc	3240
tttttacagt	cacagccact	tttgcaaaaa	ccggacagct	tcatgcctta	taactgctgt	3300
ttcggtcgac	ctgcaggcat	gcaagcttcg	cgaagcggcc	gccgacgcga	ggctggatgg	3360
ccttccccat	tatgattctt	ctcgcttccg	gcggcatcgg	gatgcccgcg	ttgcaggcca	3420
tgctgtccag	gcaggtagat	gacgaccatc	agggacagct	tcaaggatcg	ctcgcggctc	3480
ttaccagcct	aacttcgatc	actggaccgc	tgatcgtcac	ggcgatttat	gccgcctcgg	3540
cgagcacatg	gaacgggttg	gcatggattg	taggcgcgcg	cctatacctt	gtctgcctcc	3600
ccgcgttgcg	tcgcgggtgca	tggagccggg	ccacctcgac	ctgaatggaa	gccggcggca	3660
cctcgctaac	ggattcacca	ctccaagaat	tggagccaat	caattcttgc	ggagaactgt	3720
gaatgcgcaa	accaaccctt	ggcagaacat	atccatcgcg	tccgccatct	ccagcagccg	3780
cacgcggcgc	atctcgggca	cggttgggtc	ctggccacgg	gtgcgcacga	tcgtgctcct	3840
gtcgttgagg	acccggttag	gctggcgggg	ttgccttact	ggttagcaga	atgaatcacc	3900
gatacgcgag	cgaacgtgaa	gcgactgctg	ctgcaaaacg	tctgcgacct	gagcaacaac	3960
atgaatggtc	ttcggtttcc	gtgtttcgta	aagtctggaa	acgcggaagt	cagcgccctg	4020
caccattatg	ttccggatct	gcacgcgagg	atgctgctgg	ctaccctgtg	gaacacctac	4080
atctgtatta	acgaagcgct	ggcattgacc	ctgagtgatt	tttctctggt	cccgcgcgat	4140
ccataccgcc	agttgtttac	cctcacaacg	ttccagtaac	cgggcatggt	catcatcagt	4200
aaccgcgtatc	gtgagcatcc	tctctcggtt	catcggtatc	attaccccca	tgaacagaaa	4260
ttccccctta	cacggaggca	tcaagtgacc	aaacaggaaa	aaaccgccct	taacatggcc	4320
cgctttatca	gaagcagac	attaacgctt	ctggagaaac	tcaacgagct	ggacgcggat	4380
gaacaggcag	acatctgtga	atcgcttcac	gaccacgctg	atgagcttta	ccgcagctgc	4440
ctcgcgcggt	tcggtgatga	cgggtgaaaac	ctctgacaca	tgcagctccc	ggagacgggtc	4500
acagcttgct	tgtaagcggg	tgcggggagc	agacaagccc	gtcagggcgc	gtcagcgggt	4560
gttgccgggt	gtcggggcgc	agccatgacc	cagtcacgta	gcgatagcgg	agtgtatact	4620
ggcttaacta	tgcggcatca	gagcagattg	tactgagagt	gcacatcatg	cgggtgtgaaa	4680

taccgcacag	atgcgtaagg	agaaaataacc	gcatacaggcg	ctcttccgct	tcctcgctca	4740
ctgactcgct	gcgctcggtc	gttcgggtgc	ggcgagcggt	atcagctcac	tcaaaggcgg	4800
taatacgggt	atccacagaa	tcaggggata	acgcaggaaa	gaacatgtga	gcaaaaggcc	4860
agcaaaaggc	caggaaccgt	aaaaaggccg	cgttgctggc	gtttttccat	aggctccgcc	4920
cccctgacga	gcatacaaaa	aatcgacgct	caagtcagag	gtggcgaaac	ccgacaggac	4980
tataaagata	ccaggcgttt	ccccctggaa	gctccctcgt	gcgctctcct	gttccgaccc	5040
tgccgcttac	cggatacctg	tccgcctttc	tcccttcggg	aagcgtggcg	ctttctcata	5100
gctcacgctg	taggtatctc	agttcgggtg	aggctcgttc	ctccaagctg	ggctgtgtgc	5160
acgaaccccc	cgttcagccc	gaccgctgcg	ccttatccgg	taactatcgt	cttgagtcca	5220
acccggttaag	acacgactta	tcgccactgg	cagcagccac	tggtaacagg	attagcagag	5280
cgaggtatgt	aggcggtgct	acagagttct	tgaagtgggt	gcctaactac	ggctacacta	5340
gaaggacagt	atttgggtatc	tgcgctctgc	tgaagccagt	taccttcgga	aaaagagtgt	5400
gtagctcttg	atccggcaaa	caaaccaccg	ctggtagcgg	tgggtttttt	gtttgcaagc	5460
agcagattac	gcgcagaaaa	aaaggatctc	aagaagatcc	tttgatcttt	tctacgggggt	5520
ctgacgctca	gtggaacgaa	aactcacggt	aagggatttt	ggcatgaga	ttatcaaaaa	5580
ggatcttcac	ctagatcctt	ttaaattaaa	aatgaagttt	taaatcaatc	taaagtatat	5640
atgagtaaac	ttggtctgac	agttaccaat	gcttaatcag	tgaggcacct	atctcagcga	5700
tctgtctatt	tcgttcatcc	atagttgcct	gactccccgt	cgtgtagata	actacgatac	5760
gggagggctt	accatctggc	cccagtgtcg	caatgatacc	gcgagaccca	cgctcaccgg	5820
ctccagatth	atcagcaata	aaccagccag	ccggaagggc	cgagcgcgag	agtggctcctg	5880
caactttatc	cgcctccatc	cagtctatta	attggttgcg	ggaagctaga	gtaagtagtt	5940
cgccagttaa	tagtttgccg	aacgttggtg	ccattgctgc	aggcatcgtg	gtgtcacgct	6000
cgctggtttg	tatggcttca	ttcagctccg	gttcccaacg	atcaaggcga	gttacatgat	6060
cccccatgtt	gtgcaaaaaa	gcggttagct	ccttcgggtc	tccgatcgtt	gtcagaagta	6120
agttggccgc	agtgttatca	ctcatgggta	tggcagcact	gcataattct	cttactgtca	6180
tgccatccgt	aagatgcttt	tctgtgactg	gtgagtactc	aaccaagtca	ttctgagaat	6240
agtgtatgcg	gcgaccgagt	tgtctcttgc	cggcgtcaat	acgggataat	accgcgccac	6300
atagcagaac	tttaaaagtg	ctcatcattg	gaaaacgttc	ttcggggcga	aaactctcaa	6360
ggatcttacc	gctgttgaga	tccagttcga	tgtaacccac	tcgtgcaccc	aactgatctt	6420
cagcatcttt	tactttcacc	agcgtttctg	ggtgagcaaa	aacaggaagg	caaaatgccg	6480
caaaaaagg	aataaggggc	acacggaaat	ggtgaatact	catactcttc	ctttttcaat	6540
attattgaag	catttatcag	ggttattgtc	tcatgagcgg	atacatattt	gaatgtattt	6600
agaaaaataa	acaaatagg	gttccgcgca	catttccccg	aaaagtgcc	cctgacgtct	6660
aagaaaccat	tattatcatg	acattaacct	ataaaaaatag	gcgtatcacg	aggccctttc	6720
gtcttcaaga	a					6731

&lt;210&gt; 8

&lt;211&gt; 10181

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; plasmid - pDX17R

&lt;400&gt; 8

gaatthttgcg	gccgcttcga	aagctgtaat	ataaaaaacct	tcttcaacta	acggggcagg	60
ttagtacat	tagaaaaacc	actgtaaaaa	gtacagtcgg	cattatctca	tattataaaa	120
gccagtcatt	aggcctatct	gacaattcct	gaatagagtt	cataaacaat	cctgcatgat	180
aaccatcaca	aacagaatga	tgtacctgta	aagatagcgg	taaatatatt	gaattacctt	240
tattaatgaa	ttttcctgct	gtaataatgg	gtagaaggta	attactatta	ttattgatat	300
ttaagttaaa	cccagtaaat	gaagtccatg	gaataataga	aagagaaaaa	gcatttttcag	360
gtataggtgt	tttgggaaac	aattttcccc	aaccattata	tttctctaca	tcagaaagggt	420
ataaatcata	aaactctttg	aagtcattct	ttacaggagt	ccaaatacca	gagaatgttt	480
tagatacacc	gtataaaaatt	gtataaagt	gctctaactt	atcccaataa	cctaactctc	540
cgctcgtatt	gtaaccagtt	ctaaaagctg	tatttgagtt	tatcacccct	gtcactaaga	600
aaataaatgc	agggtaaaaa	ttatatcctt	cttggtttat	gtttcgggtat	aaaacactaa	660
tatcaatttc	tgtggttata	ctaaaagtcg	tttggttggt	caaataatga	ttaaatatct	720
cttttctctt	ccaattgtct	aatcaattt	tattaaagtt	catttgatat	gcctcctaaa	780
tttttatcta	aagtgaattt	aggaggctta	cttgtctgct	ttcttcatta	gaatcaatcc	840

tttttttaaaa	gtcaatatatta	ctgtaacata	aatatatatt	ttaaaaaatat	cccactttat	900
ccaatttttcg	tttggttgaa	taatgggtgc	tttagttgaa	gaataaaagac	cacattaaaa	960
aatgtgggtct	tttggtgtttt	tttaaaggat	ttgagcgtag	cgaaaaatcc	ttttctttct	1020
tatcttgata	ataagggtaa	ctattgaatt	cggtaccaag	agtttgtaga	aacgcaaaaa	1080
ggccatccgt	caggatggcc	ttctgcttaa	tttgatgcct	ggcagtttat	ggcggggcgtc	1140
ctgcccgcca	ccctccgggc	cgttgcttcg	caacgttcaa	atccgctccc	ggcggatttg	1200
tcctactcag	gagagcgttc	accgacaaac	aacagataaa	acgaaaggcc	cagtctttcg	1260
actgagcctt	tcgtttttatt	tgatgcctgg	cagttcccta	ctctcgcatg	gggagacccc	1320
acactaccat	cggcgctacg	gcgttttact	tctgagttcg	gcatgggggtc	aggtgggacc	1380
accgcgctac	tgccgccagg	caaattctgt	tttatcagac	cgcttctgcg	ttctgattta	1440
atctgtatca	ggctgaaaat	cttctctcat	ccggcaaaac	aggatcctca	actgttttat	1500
acaagtgcct	tttgcttata	ttcctcaacc	atttcaacaa	acagctgcgt	cactcgggtga	1560
tcttctgtca	gctccggatg	gaatgagcag	ccaaggaatt	gcccctgttt	cgcggtctaca	1620
atacgaccat	tatgtctcga	tagaacttca	acattttcac	cagcttctaa	aatatgcgga	1680
gcacggatga	ataccccagt	aaaaggctcg	tccaagcctt	taattgttaa	atcagcttca	1740
aagctgtcaa	cctgccggcc	aatgaatta	cgttctacaa	ccacattcag	aagacctaaa	1800
tgaggattat	ctgaaccggc	aattttctttt	gctaataata	ttaatccggc	acatgttcca	1860
aacatcgggt	tgccctgagc	agcgaattca	cgaagcggct	ccatgaattg	atacgatatcg	1920
atcaaacggc	gcacgtctgt	gctctcaccg	cccggcaaaa	tcaaccgcgtc	aacttcgttc	1980
agctgtctca	gacgtttttac	gacaagacca	gccgcgccgc	atgcttcaat	cgcattggatg	2040
tgctctctaa	ctgtctcctg	aagtcctagt	acacctattg	ttaacatgtc	agcagcgctc	2100
ctatgttctt	accagccgcg	ttcttgcata	cgctgttctg	gaagtaagtt	tgagattttca	2160
atccctttca	ttgcagtacc	aagctctttt	gacaactcag	cgattaattt	gtaatcagta	2220
aagtgagttg	ttgcttccac	aattgctttc	gcaaatttag	caggggttgtc	tgatttaaaa	2280
ataccagaac	caacaaatac	tccgtcagca	ccaagctgca	tcattgagagc	agcatcagct	2340
ggagttgcta	cgccgccagc	ggcaaagtta	acgacaggaa	gcttgccgtc	ttttttaatt	2400
tgaagaagaa	gctcgtaaag	agcacctagg	tttttgcctt	ctgtcattag	ctcatcctca	2460
ctcatcgcaa	gctactttgc	cacttgagcg	tttaactttac	gcatatggcg	aacagcctca	2520
acaatattac	ctgttccagg	ctcacctttt	gtgcgaagca	tagaagcacc	ttccgcaata	2580
cggcgtgttg	cttcaccaag	atcacggcag	ccacagacaa	aaggaaactgt	gtattcattt	2640
ttattttaaat	gaaattcttc	gtcagccggc	gtcagaactt	cacttttcac	aatatagtca	2700
acacccatag	cttcaagcac	acgcgcttca	acaatatgtc	cgatacgcgc	ttttgccatt	2760
accgggatag	atactgcatt	cattacttct	tccacgattg	taggggtcagc	catacgggca	2820
actcctccag	ccgcgcgaat	atctgctggc	acacgttcta	gcgccattac	agcgacagct	2880
ccagcttctt	cagcgatttt	cgcttggtcc	gcattgatga	cgctccatgat	gacgcgcgct	2940
ttttgcattt	ctgccattcc	gcgtttttaca	cgttcagtag	ctgtttgagc	catgttttct	3000
cctcctctag	aacaggcggg	gttgcccccg	cctgtaatta	aattattaca	caccctgtag	3060
ggaaaagtcaa	tacctttttg	taaaattttt	acacagcgtg	gatctcttct	agggacacct	3120
ctttgtaccc	ctcaaggggag	aaatattggc	ggtactgagc	acagtttttg	ttggtggaca	3180
gtgaaccata	gctgtcgtca	atagcctcga	ggtatggcag	ttggttaaaa	ggaaacaaaa	3240
agaccgtttt	cacacaaaac	ggtctttttc	gatttctttt	tacagtcaca	gccacttttg	3300
caaaaaccgg	acagcttcat	gccttataac	tgctgtttcg	gtcgacgatg	atctgccggt	3360
ttcttctgca	agccaaaaaa	ccttccggtta	caacgagaag	gattcttcac	tttctaaagt	3420
tcggcgagtt	tcattccctct	gtcccagttc	ttttttggat	caaggcagac	tgctgcaatg	3480
tctatctatt	ttaataatag	gtgcagttcg	caggcgatag	tgcccaatgg	aagtatacca	3540
aaatcaacgg	gcttgtagca	acacattagc	ccaattcgat	atcggcagaa	tagatttttt	3600
taatgccttc	gttcggtttct	aaaagcagaa	cgccttcac	atctatacct	aacgccttac	3660
cgtaaaaaggt	tccgttttaac	gttctgggtc	tcataattagt	gccaataaccg	agcgcatagc	3720
tttcccataa	aagcttaatc	ggcgtaaatac	cgtgcgtcat	ataatcccg	taccgtttct	3780
caaagcatag	taaaatatgc	tggtatgacgc	cggcccgcac	aattttttcc	ccagcagctt	3840
ggctgaggct	tgctcgcatg	tccttcaatt	catctggaaa	atcattaggc	tgctgggttaa	3900
cgtaaatgcc	gatcccaatg	atcactgaac	gtacgcggtc	ttcttcagcc	tgcatttccg	3960
ttaggatacc	gactgttttt	tttccgttaa	tcaaaatata	atttgcccat	ttaatatccg	4020
tttggtgccc	tgctgcctct	tctattccct	gcacaacagc	tactgcagca	agcagagtca	4080
gctgcggtgt	tttttggagc	ggaatgtcag	gccgcaaaat	caggctcatc	caaacaccgt	4140
ttccttcttg	agaatgccat	accctagaca	ttcggccctt	tccggtgtgt	tgtttgtcag	4200
ccaccacaag	ggtgccttcc	ggtgcgttat	tattcgcgag	ctcatgagcc	gttttttgcg	4260
tgcttgaaaag	aacgtcatgg	taaataagat	gctggcccat	cacttccggt	tttaatccaa	4320
aacgaatttc	gctttcactg	agttttccgg	gttttttgat	gagccgatat	ccttttcttc	4380



taacggcttc	tacttcataa	ccctctttcc	gaagctcttc	aatatgcttc	cacacagcag	4440
ttcttgaaca	gccgagagca	tcactgattt	tttgcccgga	aataaattca	ttgcccgcct	4500
gagaaaataa	ttcaataagg	tcttttctta	atggtgaccg	catgtcttca	gccactcctc	4560
tatgtgtttc	ttttgattgg	agagcttccc	tgtcacaaca	gcctgctcga	tccactgtaa	4620
ttcttctgac	acccattttc	cggccggccg	gtttcgaagc	gcaagcaagt	ccttaccctg	4680
gatatcaaga	tccttaaggc	ttttgatcgg	caggttttga	taagcgtact	gaatgtcctt	4740
cagtttcttt	tcatccagtt	tttcgttttg	ccgaagctgc	gatatttttg	ccgctgagag	4800
cagtgtcttt	ttcccagctc	tgtacattgt	cattgcgtca	aggctctggc	caaacgtatc	4860
ggcaatgtga	atggcttcc	tgatcacttt	tcccgggagc	ttccaggctt	tcaggaaaag	4920
gggcgcgtct	ttcaaaaacta	tgccaagggt	aattaaaaga	gcagcccaaa	gctcctcacg	4980
ggaatgttaa	gagaagaatg	gaaactcact	cgttgaaatc	aggttttctc	gtttatgata	5040
aaaaccagga	agctcttcat	acaatctcgt	ttgaatgagt	gtttgaagcg	cctggcgaga	5100
agctcttccc	tgcagcaatt	tctcaaactc	tatagttttt	cgttcgactg	aaacatggga	5160
gaggagtgat	ttttctttcg	caatggcttc	ttctgtttcc	ggtgaaagcg	taaagccaag	5220
ctggctcata	aagcgtacgg	ctctcagcat	acgaagcgca	tcctcttgaa	atctatcctc	5280
aggctttcca	acggttcgaa	tcactttctg	atcaatatct	ttcttgccgc	caaaataatc	5340
aagcaccttc	ccgtccgctg	tcatggccat	cgcatgtatc	gttaaattctc	tgcgttttag	5400
atcctcttct	aatgatgaga	taaattgcac	ttctgacggg	cttctgaaat	caacataatc	5460
agattcagtc	cggaatgtcg	tgacttcata	ggtttcatcc	tcccagagca	caataatggg	5520
cccgtgctct	tgcctacat	caacagtcgg	ctgaaacagc	cgttctactt	gatcagggtc	5580
cgcactgtgc	gcgatctcga	catctccgat	cgttcgtttc	atatagctgt	cacgaactgc	5640
gccccgcaca	aaataagcct	gatggccccg	ttcgattaag	atgcggagca	cgggaagtgc	5700
tttgataaaa	actttttcca	tgtgatcact	ccggttctgc	taaatcgga	taaatctgtt	5760
catactggct	gacaattttt	ttagaagaaa	attcattttc	aagcatctct	attgccgcct	5820
ttgtaaaacg	attgcttagc	tgttcatctt	ctaaaatgct	catcgcgcg	gctgttgcg	5880
ccgtaacatc	accgacatcc	acaaaaaatc	cgctcacatt	gttttttata	acctcagggg	5940
taccgccaat	gtttgttcca	atacaaggca	ctccgcaagc	catcgcttca	agcaggacaa	6000
ggccaaagct	ttctttttca	gatagcagca	gcttcaaate	gctaatagaa	taaagatctt	6060

caacacggtc	ttgattttcca	agcattaaga	cttggctcttc	caagccatat	tttctgataa	6120
gctcgcaggc	tgtcgatttc	tccggaccgt	ctccgactaa	aagcagcttc	gctttcgttt	6180
tgccagcgat	attgcggaac	acacggatga	catcctgcac	gcgtgcagcc	actggtaaca	6240
ggattagcag	agcgaggtat	gtaggcgggtg	ctacagagtt	cttgaagtgg	tggcctaact	6300
acggctacac	tagaaggaca	gtatttggtg	tctgcgctct	gctgaagcca	gttaccttcg	6360
gaaaaagagt	tggtagctct	tgatccggca	aacaaaccac	cgctggtagc	ggtggttttt	6420
ttgtttgcaa	gcagcagatt	acgcgcagaa	aaaaaggatc	tcaagaagat	cctttgatct	6480
tttctacggg	gtctgacgct	cagtggaaag	aaaactcacg	ttaagggatt	ttggtcatga	6540
gattatcaaa	aaggatcttc	acctagatcc	ttttaaatga	aaaatgaagt	tttaaatcaa	6600
tctaaagtat	atagatagtaa	acttggtctg	acagttacca	atgcttaatc	agtgaaggac	6660
ctatctcagc	gatctgtcta	tttcgttcat	ccatagttgc	ctgaactccc	gtcgtgtaga	6720
taactacgat	acgggagggc	ttaccatctg	gccccagtg	tgcaatgata	ccgcgagacc	6780
cacgctcacc	ggctccagat	ttatcagcaa	taaaccagcc	agccggaagg	gccgagcgca	6840
gaagtgggtc	tgcaacttta	tccgcctcca	tccagtctat	taattggtgc	cgggaagcta	6900
gagtaagtag	ttcgccagtt	aatagtttgc	gcaacgttgt	tgccattgct	acaggcatcg	6960
tggtgtcacg	ctcgtcgttt	ggtatggctt	cattcagctc	cggttcccaa	cgatcaaggc	7020
gagttacatg	atccccatg	ttgtgcaaaa	aagcggttag	ctccttcggt	cctccgatcg	7080
ttgtcagaag	taagtggcc	gcagtgttat	cactcatggt	tatggcagca	ctgcataatt	7140
ctcttactgt	catgccatcc	gtaagatgct	tttctgtgac	tggtgagtac	tcaaccaagt	7200
cattctgaga	atagtgtatg	cggcgaccga	gttgctcttg	cccggcgtca	atacgggata	7260
ataccgcgcc	acatagcaga	actttaaaag	tgctcatcat	tggaaaacgt	tcttcggggc	7320
gaaaactctc	aaggatctta	ccgctgttga	gatccagttc	gatgtaacct	actcgtgcac	7380
ccaactgatc	ttcagcatct	tttactttca	ccagcgtttc	tgggtgagca	aaaacaggaa	7440
ggcaaaaatg	cgcaaaaaag	ggaataaggg	cgacacggaa	atggtgaata	ctcatactct	7500
tcctttttca	atattattga	agcatttatc	agggttattg	tctcatgagc	ggatacatat	7560
ttgaatgtat	ttagaaaaat	aaacaaatga	gggttcgcg	cacatttccc	cgaaaagtgc	7620
ccctgacgct	ctaagaaacc	attattatca	tgacattaac	ctataaaaat	aggcgtatca	7680
cgaggccctt	tctgtctcga	tgcggatcag	tgagggtttg	caactgcggg	tcaaggatct	7740
ggatttctgat	cacggcacga	tcacgtgcg	ggagggcaag	ggctccaagg	atcgggcctt	7800
gatgttacct	gagagcttgg	caccagcct	gcgcgagcag	gggaattgat	ccggtggatg	7860
accttttgaa	tgacctttaa	tagattatat	tactaattaa	ttggggaccc	tagaggtccc	7920

```

cttttttatt ttaaaaattt tttcacaaaa cggtttacaa gcataacggg ttttgctgcc 7980

cgcaaacggg ctgttctggg gttgctagtt tggtatcaga atcgagatc cggcttcagg 8040
tttgccggct gaaagcgcta tttcttccag aattgccatg attttttccc cacgggaggg 8100
gtcactgggt cccgtgttgt cggcagcttt gattcgataa gcagcatcgc ctgtttcagg 8160
ctgtctatgt gtgactgttg agctgtaaca agttgtctca ggtgttcaat ttcattgtct 8220
agttgctttg ttttactggg ttcacctgtt ctattagggt ttacatgctg ttcattctgt 8280
acattgtcga tctgttcatt gtgaacagct ttaaattgcac caaaaactcg taaaagctct 8340
gatgtatcta tcttttttac accgttttca tctgtgcata tggacagttt tccctttgat 8400
atctaacggg gaacagttgt tctacttttg tttgttagtc ttgatgcttc actgatagat 8460
acaagagcca taagaacctc agatccttcc gtatttagcc agtatgttct ctagtgtggg 8520
tcgttggttt tgcgtgagcc atgagaacga accattgaga tcatgcttac tttgcatgtc 8580
actcaaaaat tttgcctcaa aactgggtgag ctgaattttt gcagttaaag catcgtgtag 8640
tggtttttct agtccgttac gtaggttaga atctgatgta atgggtgttg gtattttgtc 8700
accattcatt tttatctggg tgttctcaag ttcggttacg agatccattt gtctatctag 8760
ttcaacttgg aaaatcaacg tatcagtcgg gcggcctcgc ttatcaacca ccaatttcat 8820
attgctgtaa gtgtttaaat ctttacttat tggtttcaaa acccattggg taagcctttt 8880
aaactcatgg tagttatttt caagcattaa catgaactta aattcatcaa ggctaattc 8940
tatatttgcc ttgtgagttt tcttttgtgt tagttctttt aataaccact cataaatctt 9000
catagagtat ttgttttcaa aagacttaac atgttccaga ttatatttta tgaattttt 9060
taactggaaa agataaggca atatctcttc actaaaaact aattctaatt ttcgcttga 9120
gaacttggca tagtttgtcc actggaaaat ctcaaagcct ttaaccaaag gattcctgat 9180
ttccacagtt ctgctcatca gctctctggg tgctttagct aatacaccat aagcattttc 9240
cctactgatg ttcattcatc gagcgtattg gttataagtg aacgataccg tccgttcttt 9300
ccttgtaggg ttttcaatcg tggggttgag tagtgccaca cagcataaaa ttagcttggg 9360
ttcatgctcc gtttaagtc atgcgactaat cgctagttca tttgctttga aaacaactaa 9420
ttcagacata catctcaatt ggtctagggt attttaatca ctataccaat tgagatggg 9480
tagtcaatga taattactag tctttttcct ttgagttgtg ggtatctgta aattctgcta 9540
gacgtttgtg ggaaaacttg taaattctgc tagaccctct gtaaattccg ctgaccttt 9600
gtgtgttttt tttgtttata ttcaagtggg tataatttat agaataaaga aagaataaaa 9660
aaagataaaa agaataagtc ccagccctgt gtataactca ctactttagt cagttccgca 9720
gtattacaaa aggatgtcgc aaacgctgtt tgctcctcta caaacagac cttaaaaccc 9780
taaaggctta agtagcacc tcgcaagctc gggcaaactg ctgaatatc cttttgtctc 9840
cgaccatcag gcacctgagt cgctgtcttt ttcgtgacat tcagttcgtc gcgctcacgg 9900

ctctggcagt gaatgggggt aaatggcact acaggcgcct tttatggatt catgcaagga 9960
aactacccat aatacaagaa aagcccgtca cgggcttctc agggcgtttt atggcgggg 10020
tgctatgtgg tgctattcga ctttttgcgt ttcagcagtt cctgccctct gattttccag 10080
tctgaccact tcggattatc ccgtgacagg tcattcagac tggctaattg acccagtaag 10140
gcagcgggtat catcaacagg cttaccctgc ttactgtcaa c 10181

```

&lt;210&gt; 9

&lt;211&gt; 194

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; promoter sequence

&lt;400&gt; 9

```

gctattgacg acagctatgg ttcactgtcc accaaccaaa actgtgctca gtaccgccaa 60
tattttctccc ttgaggggta caaagagggt tccctagaag agatccacgc tgtgtaaaaa 120
ttttacaaaa aggtattgac tttccctaca ggggtgtgtaa taatttaatt acaggcgggg 180
gcaacccgcg ctgt 194

```

&lt;210&gt; 10

&lt;211&gt; 163

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

<220>

<223> promoter sequence

<400> 10

gcctacctag cttccaagaa agatataccta acagcacaag agcggaaaga tgttttgttc 60  
 tacatccaga acaacctctg ctaaaattcc tgaaaaattt tgcaaaaagt tggtgacttt 120  
 atctacaagg tgtggtataa taatcttaac aacagcagga cgc 163

<210> 11

<211> 127

<212> DNA

<213> Artificial Sequence

<220>

<223> promoter sequence

<400> 11

gaggaatcat agaattttgt caaaataatt ttattgacaa cgtcttatta acgttgatat 60  
 aatttaaatt ttatttgaca aaaatgggct cgtgtgtgac aataaatgta gtgaggtgga 120  
 tgcaatg 127

<210> 12

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 12

gaaatcatat aactatacct tgattagggg gaccaagaaa tg 42

<210> 13

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 13

caagaacgcg gctggtaaga acataggagc gctgctgaca tg 42

<210> 14

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 14

tctagaaagg aggtga 16

<210> 15

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 15

tctagaagga ggagaaaaca tg

22

<210> 16

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 16

tctagaggag gagaaaacat g

21

<210> 17

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 17

taagaacaaa ggaggagagc tgacatg

27

<210> 18

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 18

taagaacaga ggaggagagc tgacatg

27

<210> 19

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> ribosome binding site

<400> 19

taagaagaaa ggaggtgagc tgacatg

27

<210> 20

<211> 1282

<212> DNA

<213> Bacillus subtilis

<400> 20

ttaatcaatt gaaagagctc tgatggatgt tagggctctt tcgcgtaata tactgaaaaa 60  
 acccaatttt taataaaaaa tgattttcaa agcgctaaaa accgaataaa atagtatata 120  
 tgcataatgaa ttattggatt tctaggatac aataaggatt agaaatcata taactatacc 180  
 ttgattaggg ggaccaagaa atgggtcaaa caggtactga acgtgtaaaa cgcggaatgg 240  
 cagaaatgca aaaaggcggc gtcacatcatg acgtcatcaa tgcggaacaa gcgaaaatcg 300

```

ctgaagaagc tggagctgtc gctgtaatgg cgctagaacg tgtgccagca gatattcgcg 360
cggctggagg agttgcccgt atggctgacc ctacaatcgt ggaagaagta atgaatgcag 420
tatctatccc ggtaatggca aaagcgcgta tcggacatat tgttgaagcg cgtgtgcttg 480
aagctatggg tgttgactat attgatgaaa gtgaagttct gacgccggct gacgaagaat 540
ttcattttaa taaaaatgaa tacacagttc cttttgtctg tggctgccgt gatcttggtg 600
aagcaacacg ccgtattgcg gaaggtgctt ctatgcttcg cacaaaaggt gagcctggaa 660
caggtaatat tgttgaggct gttcgccata tgcgtaaagt taacgctcaa gtgcgcaaag 720
tagttgcgat gagtgaggat gagctaataa cagaagcgaa aaacctagggt gctccttacg 780
agcttcttct tcaaattaaa aaagacggca agcttcctgt cgtaaacttt gccgctggcg 840
gcgtagcaac tccagctgat gctgctctca tgatgcagct tgggtgctgac ggagtatttg 900
ttggttctgg tattttttaa tcagacaacc ctgctaattt tgcgaaagca attgtggaag 960
caacaactca ctttactgat tacaatttaa tcgctgagtt gtcaaaagag cttgggtactg 1020
caatgaaagg gattgaaatc tcaaacttac ttccagaaca gcgtatgcaa gaacgcggct 1080
ggtaagaaca taggagcgct gctgacatgt taacaatagg tgtactagga cttcaaggag 1140
cagttagaga gcacatccat gcgattgaag catgcggcgc ggctggtctt gtcgtaaaac 1200
gtccggagca gctgaacgaa gttgacgggt tgattttgcc gggcggtgag agcacgacga 1260
tgcgccgttt gatcgatacg ta 1282

```

<210> 21

<211> 293

<212> PRT

<213> Bacillus subtilis

<400> 21

```

Ala Gln Thr Gly Thr Glu Arg Val Lys Arg Gly Met Ala Glu Met Gln
 1          5          10          15
Lys Gly Gly Val Ile Met Asp Val Ile Asn Ala Glu Gln Ala Lys Ile
 20          25          30
Ala Glu Glu Ala Gly Ala Val Ala Val Met Ala Leu Glu Arg Val Pro
 35          40          45
Ala Asp Ile Arg Ala Ala Gly Gly Val Ala Arg Met Ala Asp Pro Thr
 50          55          60
Ile Val Glu Glu Val Met Asn Ala Val Ser Ile Pro Val Met Ala Lys
 65          70          75          80
Ala Arg Ile Gly His Ile Val Glu Ala Arg Val Leu Glu Ala Met Gly
 85          90          95
Val Asp Tyr Ile Asp Glu Ser Glu Val Leu Thr Pro Ala Asp Glu Glu
100          105          110
Phe His Leu Asn Lys Asn Glu Tyr Thr Val Pro Phe Val Cys Gly Cys
115          120          125
Arg Asp Leu Gly Glu Ala Thr Arg Arg Ile Ala Glu Gly Ala Ser Met
130          135          140
Leu Arg Thr Lys Gly Glu Pro Gly Thr Gly Asn Ile Val Glu Ala Val
145          150          155          160
Arg His Met Arg Lys Val Asn Ala Gln Val Arg Lys Val Val Ala Met
165          170          175
Ser Glu Asp Glu Leu Met Thr Glu Ala Lys Asn Leu Gly Ala Pro Tyr
180          185          190
Glu Leu Leu Leu Gln Ile Lys Lys Asp Gly Lys Leu Pro Val Val Asn
195          200          205
Phe Ala Ala Gly Gly Val Ala Thr Pro Ala Asp Ala Ala Leu Met Met
210          215          220
Gln Leu Gly Ala Asp Gly Val Phe Val Gly Ser Gly Ile Phe Lys Ser
225          230          235          240
Asp Asn Pro Ala Lys Phe Ala Lys Ala Ile Val Glu Ala Thr Thr His
245          250          255
Phe Thr Asp Tyr Lys Leu Ile Ala Glu Leu Ser Lys Glu Leu Gly Thr
260          265          270
Ala Met Lys Gly Ile Glu Ile Ser Asn Leu Leu Pro Glu Gln Arg Met
275          280          285
Gln Glu Arg Gly Trp

```

290

<210> 22  
 <211> 988  
 <212> DNA  
 <213> Bacillus subtilis

<400> 22  
 ctgggtatttt taaatcagac aaccctgcta aatttgcgaa agcaattgtg gaagcaacaa 60  
 ctcacttttac tgattacaaa ttaatcgctg agttgtcaaa agagcttggg actgcaatga 120  
 aagggattga aatctcaaac ttacttccag aacagcgtat gcaagaacgc ggctggtaag 180  
 aacataggag cgctgctgac atgttaacaa taggtgtact aggacttcaa ggagcagtta 240  
 gagagcacat ccatgcgatt gaagcatgcg gcgcggctgg tcttgctgta aaacgtccgg 300  
 agcagctgaa cgaagttgac ggggtgattt tgccgggcgg tgagagcacg acgatgcgcc 360  
 gtttgatcga tacgtatcaa ttcattggagc cgcttcgtga attcgctgct caggggcaaac 420  
 cgatgttttg aacatgtgcc ggattaatta tattagcaaa agaaattgcc ggttcagata 480  
 atcctcattt aggtcttctg aatgtgggtg tagaacgtaa ttcatttggc cggcaggttg 540  
 acagctttga agctgattta acaattaaag gcttggacga gccttttact ggggtattca 600  
 tccgtgctcc gcatatttta gaagctgggtg aaaatgttga agttctatcg gagcataatg 660  
 gtcgtattgt agccgcgaaa caggggcaat tccttggtg ctcattccat ccggagctga 720  
 cagaagatca ccgagtgcg cagctgtttg ttgaaatggg tgaggaatat aagcaaaaagg 780  
 cacttgata aaacagttga aagctgtgga aacttatagt acattataag cacaaataaa 840  
 gatcgaaaag cgttgatagg aactagtagg gagcctctct ttctaagaga gccgatggtt 900  
 ggtgcgaatc ggtgaaagat gctgtctgaa tccatccttg agcgaaatgc tgaagcgagt 960  
 aggcatttac gggataaccg ttatgttt 988

<210> 23  
 <211> 196  
 <212> PRT  
 <213> Bacillus subtilis

<400> 23  
 Met Leu Thr Ile Gly Val Leu Gly Leu Gln Gly Ala Val Arg Glu His  
 1 5 10 15  
 Ile His Ala Ile Glu Ala Cys Gly Ala Ala Gly Leu Val Val Lys Arg  
 20 25 30  
 Pro Glu Gln Leu Asn Glu Val Asp Gly Leu Ile Leu Pro Gly Gly Glu  
 35 40 45  
 Ser Thr Thr Met Arg Arg Leu Ile Asp Thr Tyr Gln Phe Met Glu Pro  
 50 55 60  
 Leu Arg Glu Phe Ala Ala Gln Gly Lys Pro Met Phe Gly Thr Cys Ala  
 65 70 75 80  
 Gly Leu Ile Ile Leu Ala Lys Glu Ile Ala Gly Ser Asp Asn Pro His  
 85 90 95  
 Leu Gly Leu Leu Asn Val Val Val Glu Arg Asn Ser Phe Gly Arg Gln  
 100 105 110  
 Val Asp Ser Phe Glu Ala Asp Leu Thr Ile Lys Gly Leu Asp Glu Pro  
 115 120 125  
 Phe Thr Gly Val Phe Ile Arg Ala Pro His Ile Leu Glu Ala Gly Glu  
 130 135 140  
 Asn Val Glu Val Leu Ser Glu His Asn Gly Arg Ile Val Ala Ala Lys  
 145 150 155 160  
 Gln Gly Gln Phe Leu Gly Cys Ser Phe His Pro Glu Leu Thr Glu Asp  
 165 170 175  
 His Arg Val Thr Gln Leu Phe Val Glu Met Val Glu Glu Tyr Lys Gln  
 180 185 190  
 Lys Ala Leu Val  
 195

<210> 24  
 <211> 990  
 <212> DNA  
 <213> Escherichia coli

<400> 24  
 atggttaaaa cccaacgtgt tgtgatcact cccggcgagc ccgcccgggat tggcccggac 60  
 ttagttgtcc agcttgacaca gcgtgagtg ccggtcgaac tggttgtttg tgccgatgcc 120  
 actctcctta ccaaccgggc agcgatgctc gggttgccgc tcacctcccg cccttattcc 180  
 cccaactccc ctgcacaacc gcaaactgcg ggcacattaa cgctacttcc tgtcgcgcta 240  
 cgtgcacctg tcaactgcggg gcagttagcg gttgaaaatg ggcattatgt ggtggaaaacg 300  
 ctggcgcgag cgtgcgatgg ttgtctgaac ggcgaatttg ccgcgctgat cacagggtccg 360  
 gtgcataaag gcgttattaa cgaçgctggc attcctttta ccggtcatac cgagtttttc 420  
 gaagagcggt cgcaggcgaa aaagggtggtg atgatgctgg cgaccgaaga acttcgcgctg 480  
 gcgctggcaa cgacgcattt accgctgcgc gatatcgag acgctatcac ccctgcactt 540  
 ttgcacgaag tgattgctat tttgcatcac gatttgcgga ccaaatttgg tattgccgaa 600  
 ccgcgcatte tggctctgcgg gctgaatccg cagcgggcg aaggcgggtca tatgggtacg 660  
 gaagagatag acaccattat tccgggtgctc aatgagctgc gggcgcaggg gatgaaactc 720  
 aacgggcccgc tgcctgccga taccctgttt cagccgaaat atcttgataa cgccgacgcc 780  
 gtgctggcga tgtaccacga tcagggtctt cccgtgctaa aataccaggg cttcgggcgc 840  
 ggtgtgaaca ttacgctggg cctgcccttt attcgcacat cagtggacca cggcaccgcg 900  
 cttgaactgg cgggacgtgg caaagccgat gtcggcagtt ttattacggc gcttaatctc 960  
 gccatcaaaa tgattgttaa cacccaatga 990

<210> 25  
 <211> 329  
 <212> PRT  
 <213> Escherichia coli

<400> 25  
 Met Val Lys Thr Gln Arg Val Val Ile Thr Pro Gly Glu Pro Ala Gly  
 1 5 10 15  
 Ile Gly Pro Asp Leu Val Val Gln Leu Ala Gln Arg Glu Trp Pro Val  
 20 25 30  
 Glu Leu Val Val Cys Ala Asp Ala Thr Leu Leu Thr Asn Arg Ala Ala  
 35 40 45  
 Met Leu Gly Leu Pro Leu Thr Leu Arg Pro Tyr Ser Pro Asn Ser Pro  
 50 55 60  
 Ala Gln Pro Gln Thr Ala Gly Thr Leu Thr Leu Leu Pro Val Ala Leu  
 65 70 75 80  
 Arg Ala Pro Val Thr Ala Gly Gln Leu Ala Val Glu Asn Gly His Tyr  
 85 90 95  
 Val Val Glu Thr Leu Ala Arg Ala Cys Asp Gly Cys Leu Asn Gly Glu  
 100 105 110  
 Phe Ala Ala Leu Ile Thr Gly Pro Val His Lys Gly Val Ile Asn Asp  
 115 120 125  
 Ala Gly Ile Pro Phe Thr Gly His Thr Glu Phe Phe Glu Glu Arg Ser  
 130 135 140  
 Gln Ala Lys Lys Val Val Met Met Leu Ala Thr Glu Glu Leu Arg Val  
 145 150 155 160  
 Ala Leu Ala Thr Thr His Leu Pro Leu Arg Asp Ile Ala Asp Ala Ile  
 165 170 175  
 Thr Pro Ala Leu Leu His Glu Val Ile Ala Ile Leu His His Asp Leu  
 180 185 190  
 Arg Thr Lys Phe Gly Ile Ala Glu Pro Arg Ile Leu Val Cys Gly Leu  
 195 200 205  
 Asn Pro His Ala Gly Glu Gly Gly His Met Gly Thr Glu Glu Ile Asp  
 210 215 220  
 Thr Ile Ile Pro Val Leu Asn Glu Leu Arg Ala Gln Gly Met Lys Leu  
 225 230 235 240

Asn Gly Pro Leu Pro Ala Asp Thr Leu Phe Gln Pro Lys Tyr Leu Asp  
 245 250 255  
 Asn Ala Asp Ala Val Leu Ala Met Tyr His Asp Gln Gly Leu Pro Val  
 260 265 270  
 Leu Lys Tyr Gln Gly Phe Gly Arg Gly Val Asn Ile Thr Leu Gly Leu  
 275 280 285  
 Pro Phe Ile Arg Thr Ser Val Asp His Gly Thr Ala Leu Glu Leu Ala  
 290 295 300  
 Gly Arg Gly Lys Ala Asp Val Gly Ser Phe Ile Thr Ala Leu Asn Leu  
 305 310 315 320  
 Ala Ile Lys Met Ile Val Asn Thr Gln  
 325

<210> 26  
 <211> 732  
 <212> DNA  
 <213> Escherichia coli

<400> 26  
 atggctgaat tactgttagg cgtcaacatt gaccatatcg ctacgctgcg caacgcgcgc 60  
 ggtaccgctt acccggatec ggtgcaggcc gcgtttattg ccgagcaggc gggagcggac 120  
 ggcattaccg tgcattttac tgaagatcgc cgtcacatta ctgaccgcga cgtgcgcac 180  
 ctgctgcaga cgctggatag ccgcatgaat ctggagatgg cggtgaccga agagatgctg 240  
 gcgatcgccg ttgagacgaa gccacatttt tgctgcctgg taccggaaaa gcgtcaggaa 300  
 gtaacaaccg aaggcggcct ggatgtcgca gggcagcgtg acaaaatgcg cgatgcctgc 360  
 aaacgtctgg cagatgccgg gattcagggt tctctgttta ttgacgccga tgaagagcag 420  
 atcaaagctg cggcagaggt tggcgcaccg tttatcgaga tccacaccgg ttgctatgct 480  
 gatgccaaaa ctgacgccga acaggcgcaa gagctggcgc gtatcgccaa agccgcgacc 540  
 tttgccgcaa gcctcgggtc gaaagttaac gccggacacg gtctgacctc tcacaacgtg 600  
 aaagccattg ccgccatccc tgagatgcat gaactgaata tcgggtcatgc cattattggg 660  
 cgtgcagtga tgaccggact gaaagatgcg gtggcagaaa tgaagcgtct gatgctggaa 720  
 gcgcgtggct aa 732

<210> 27  
 <211> 243  
 <212> PRT  
 <213> Escherichia coli

<400> 27  
 Met Ala Glu Leu Leu Leu Gly Val Asn Ile Asp His Ile Ala Thr Leu  
 1 5 10 15  
 Arg Asn Ala Arg Gly Thr Ala Tyr Pro Asp Pro Val Gln Ala Ala Phe  
 20 25 30  
 Ile Ala Glu Gln Ala Gly Ala Asp Gly Ile Thr Val His Leu Arg Glu  
 35 40 45  
 Asp Arg Arg His Ile Thr Asp Arg Asp Val Arg Ile Leu Arg Gln Thr  
 50 55 60  
 Leu Asp Thr Arg Met Asn Leu Glu Met Ala Val Thr Glu Glu Met Leu  
 65 70 75 80  
 Ala Ile Ala Val Glu Thr Lys Pro His Phe Cys Cys Leu Val Pro Glu  
 85 90 95  
 Lys Arg Gln Glu Val Thr Thr Glu Gly Gly Leu Asp Val Ala Gly Gln  
 100 105 110  
 Arg Asp Lys Met Arg Asp Ala Cys Lys Arg Leu Ala Asp Ala Gly Ile  
 115 120 125  
 Gln Val Ser Leu Phe Ile Asp Ala Asp Glu Glu Gln Ile Lys Ala Ala  
 130 135 140  
 Ala Glu Val Gly Ala Pro Phe Ile Glu Ile His Thr Gly Cys Tyr Ala  
 145 150 155 160  
 Asp Ala Lys Thr Asp Ala Glu Gln Ala Gln Glu Leu Ala Arg Ile Ala



OGZ-002US

					165				170					175		
Lys	Ala	Ala	Thr	Phe	Ala	Ala	Ser	Leu	Gly	Leu	Lys	Val	Asn	Ala	Gly	
			180					185					190			
His	Gly	Leu	Thr	Tyr	His	Asn	Val	Lys	Ala	Ile	Ala	Ala	Ile	Pro	Glu	
		195					200					205				
Met	His	Glu	Leu	Asn	Ile	Gly	His	Ala	Ile	Ile	Gly	Arg	Ala	Val	Met	
	210					215					220					
Thr	Gly	Leu	Lys	Asp	Ala	Val	Ala	Glu	Met	Lys	Arg	Leu	Met	Leu	Glu	
225					230					235					240	
Ala	Arg	Gly														